such that it has a dissolved oxygen content less than about 5 ppm. Preferably, it has a dissolved oxygen content of less than about 2 ppm, and still more preferably, less than 1 ppm.

The composition may be manufactured by a process comprising the steps of: (1) providing water with a calcium carbonate content less than about 1000 ppm and preferably less than about 500 ppm; (2) adding chlorine dioxide to the water in an amount less than about 0.5% and preferably less than about 0.1% by weight; and (3) adding a food grade acidulent to the water in sufficient quantity to adjust the pH of the composition to a value greater than about 7 and preferably greater than about 9. Most preferably, (1) the water has a calcium carbonate content less than about 300 ppm, such as de-ionized water filtered by reverse osmosis or distilled water; (2) the chlorine dioxide is added in a range of about 0.01 to 0.1% by weight; and (3) the food grade acidulent is added in sufficient quantity to adjust the pH of the composition to a value in a range of about 9.2 to 9.4.

A stabilized chlorine dioxide, such as Anthium Dioxide®, may be added to the water as the source of chlorine dioxide. Anthium Dioxides® is a registered trade mark for a 5% chlorine dioxide solution manufactured by International Dioxide Inc., Clark, N.J. Anthium Dioxide® is an aqueous solution of sodium chlorate which provides chlorine dioxide under formulation conditions. If Anthium Dioxide® is used as the source of chlorine dioxide, it may be present in the solution in a range of 5% to 10% by weight. Alternatively, Oxine® or Puregene®, which are registered trade marks for 2% chlorine dioxide solutions manufactured by International Biocide, Norman, Okla., may be used as the source of chlorine dioxide.

The manner of blending of water and the other ingredients is important to the shelf-life of the composition. Vigorous mixing may incorporate dissolved oxygen into the composition and shorten the shelf-life of the composition. It is preferred that the source of chlorine dioxide and the food grade acidulent are blended into the water, in such a manner that a dissolved oxygen content of the composition is less than about 5 ppm. Preferably, the final solution has a dissolved oxygen content of less than about 2 ppm, and still more preferably, less than about 1 ppm. This may be accomplished, for example, by mixing the components with low shear, e.g., by hand mixing, so that there is no unnecessary agitation of the composition and no excess oxygen is introduced. Alternatively, the composition may be mixed using known mixing devices under conditions which preclude the introduction of excess oxygen, such as under a cover of inert gas, e.g., nitrogen.

A product for reducing odors emanating from animal discharges may include the composition, as described herein, and disposed in a container for storing the composition, which comprises a material, e g., such as metal, opaque plastic, or the like, that substantially blocks the transmission of ultra-violet radiation. Protection against ultra-violet radiation helps prevent the chemical degradation of the composition and is important in applications in which a longer shelf-life is desired. Because the purchased product may be used over a period of weeks or months, extending the shelf-life is important to the commercial success of the product. The product may further include application means for applying measured amounts of the composition to the animal or animal food. Suitable application means is a spray applicator. Preferably, such a spray applicator applies a dosage in a range of about 0.025 to 0.075 ounces per spray, e.g., 0.05 ounces per spray (0.14×10^{-5} m^3 per spray).

The method for using the composition of the present invention comprises the steps of applying a dosage of the composition, as described herein, in an amount effective to reduce odors to food rations and feeding the food rations to an animal. Preferably; the dosage is applied using application means, which delivers about 0.05 ounces per application (0.14×10^{-5} m^3 per application). A suitable application has been found to be at least about three sprays per day applied to each food ration. This results in a dosage of about one ounce per week (2.96×10^{-5} m^3 per week).

The invention may be further understood by a consideration of the following non-limiting example.

EXAMPLE

A composition for reducing odors emanating from animal discharges was prepared by providing 29.75 U.S. fluid ounces (8.81×10^{-4} m^3) purified water and adding 2.25 U.S. fluid ounces (6.66×10^{-5} m^3) of Anthium Dioxide® and 4 drops of distilled white table vinegar. This composition was effective in reducing odors emanating from cat feces and urine.

Two groups of 40 cats were divided as follows:

Control Group—10 pens with 4 cats per pen

Test Group—10 pens with 4 cats per pen.

Both control and test pens contained wooden litter boxes with sand as the litter media. The cats were fed the same food in equal amounts. Uniform doses of the above composition were applied to each food ration using a spray applicator. The spray applicator delivered a dosage of about 0.05 ounces per spray (0.14×10^{-5} m^3 per spray). Three sprays were applied to each food ration and each test cat was fed once per day. This amounts to 21 sprays per cat per week or about one ounce (2.96×10^{-5} m^3) of the composition per cat per week. At the conclusion of the test, it was discovered that the test litter box accumulation of urine and feces was virtually odor free to the average human nose whereas the control litter box accumulations had the usual strong odors. Further, over five cat generations tested, no adverse effects were noted in the number of kittens born or the health of the kittens or nursing mothers.

Other embodiments of the invention will be apparent to persons skilled in the art from a consideration of this specification or the practice of the invention disclosed herein. It is intended that the specification and the example be considered as exemplary only, with the true scope and spirit of the invention being indicated by the following claims.

We claim:

1. A composition for reducing odors emanating from animal discharges consisting essentially of:

(a) water with a calcium carbonate content less than about 1000 ppm;

(b) chlorine dioxide in an amount effective to reduce odors emanating from animal discharges; and

(c) an acidulent in an amount sufficient to adjust the pH of the composition to a value greater than above 7.

2. The composition of claim **1**, wherein said water has a calcium carbonate content less than about 500 ppm.

3. The composition of claim **1**, wherein said water has a calcium carbonate content less than about 300 ppm.

4. The composition of claim **1**, wherein said food grade acidulent is present in an amount sufficient to adjust the pH of the composition to a value greater than about 9.

5. The composition of claim **1**, wherein said food grade acidulent is present in an amount sufficient to adjust the pH of the composition to a value grater than about 9.2 to 9.4.

6. The composition of claim **1**, wherein said water is de-ionized water filtered by reverse osmosis.